I CLAIM:

1. A component operating with bulk acoustic waves, said component comprising a carrier substrate; a lower electrode that faces the carrier substrate, an upper electrode and a piezoelectric layer arranged between the two electrodes; an acoustic mirror being arranged between the carrier substrate and the lower electrode, said acoustic mirror comprising at least one layer with a high acoustic impedance and at least one layer of a low acoustic impedance being arranged in a stack with the uppermost mirror layer of the stack being the layer of low acoustic impedance, the uppermost mirror layer exhibiting a varying thickness with an upper boundary surface of the uppermost mirror layer being planar to the lower electrode, and the uppermost layer enclosing structures of the structured layer and forming a seal surface covered by the structure with one of a mirror layer with a low acoustic impedance arranged below the structured layer and the carrier substrate.

2. A component according to claim 1, wherein the acoustic mirror has a plurality of layers with a high acoustic impedance which are structured.

3. A component according to claim 2, wherein the mirror layers with high acoustic impedance are formed of a material selected from a group consisting of tungsten and molybdenum and the mirror layers with the low impedance are formed of silicon oxide.

4. A component according to claim 1, wherein the piezoelectric layer comprises a multi-layer assembly.

5. A component according to claim 1, which includes an additional piezoelectric layer being formed on the upper electrode and an additional electrode on the additional piezoelectric layer.

6. A component according to claim 5, which includes at least a partially permeable coupling layer being provided between the upper electrode and the at least one additional piezoelectric layer and a second additional electrode is arranged between the coupling layer and the at least one additional piezoelectric layer.

7. A component according to claim 1, wherein the carrier substrate comprises a plurality of dielectric layers with at least one metallized plane being provided between successive dielectric layers.

8. A component according to claim 1, wherein at least one of the electrodes is formed by a plurality of layers.

9. A component according to claim 1, wherein the mirror layer with high acoustic impedance is a metal selected from a group consisting of tungsten and molybdenum and the mirror layer with a low acoustic impedance is formed of silicon oxide.

10. A method to produce a component operating with bulk acoustic waves, said method comprising the steps of providing a carrier substrate; forming an acoustic mirror on the substrate by depositing a layer with a high acoustic impedance on the carrier substrate, structuring the layer of high acoustic impedance to form a structured layer, depositing an uppermost mirror layer with a low acoustic impedance on the structured layer; thinning and planarizing the upper surface of the uppermost mirror layer to form a planar surface; forming a lower electrode on the planar surface; forming a structured piezoelectric layer on the lower electrode and then forming an upper electrode on the piezoelectric layer.

11. A method according to claim 10, wherein the step of thinning the uppermost mirror layer occurs by means of chemical mechanical polishing.

12. A method according to claim 10, which includes, prior to depositing the uppermost mirror layer, depositing an additional layer of low acoustic impedance on the structured layer, depositing a second layer of high acoustic impedance on the additional layer and structuring the second layer to form a second structured layer so that the uppermost layer is applied on the second structured layer.

13. A method according to claim 12, wherein the step of thinning the uppermost layer occurs by means of chemical mechanical polishing.

14. A method according to claim 10, which includes, subsequent to depositing the upper electrode on the piezoelectric layer, depositing a coupling layer, then forming a lower electrode of a second resonator followed by a second piezoelectric layer and a second upper electrode on the coupling layer.